

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RESEARCH QUARTERLY PROGRESS REPORT**  
 MR-6068 (REV.5/93)

1. TITLE DEVELOPMENT OF A NEW GUARDRAIL END TREATMENT (PHASE II)				2. FEDERAL STUDY NUMBER F98OR50 C	
3. OBJECTIVE To develop a guardrail end treatment for highways that meets federal crash worthiness requirements, is completely nongating, costs less than similar proprietary devices, does not need to be flared away from the shoulder and is easy to maintain.				2a. CONTRACT NUMBER N/A	
				4. EA (DIV-UNIT-EA) 65-338-680821	
5. PRESENT WORK PLAN APPROVED ON: Jul 1, 1997	6. ORIGINAL START Aug 7, 1997	7. ESTIMATED COMPLETION Dec 2003	8. TIME ELAPSED 84% (4%/qtr)	9. PROJECT COMPLETED TO DATE 18%	

10. List specific major steps or phases to accomplish the objective.

Use the following symbols to indicate planned progress.

Circle symbol when actually accomplished.

S = Starting Date, C = Estimated Completion Date

**List of Tasks:**

1. Concept development & basic material testing
2. Phase I Dynamic Testing (Basic Component Testing)
3. Phase I I Dynamic Testing (Optional Thermal Testing).
4. Phase I I I Dynamic Testing (Preliminary Full-scale Development Trials)
5. Phase I V Dynamic Testing (Compliance Tests)
6. Crash Test Data Analysis & Report
7. Publish and Distribute Report
8. Request Approval and Acceptance from FHWA & Traffic Operations
9. Implement device

FISCAL YEAR												
Qtr.	00/01				01/02				02/03			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Prior	Jul Sep	Oct Dec	Jan Mar	Apr Jun	Jul Sep	Oct Dec	Jan Mar	Apr Jun	Jul Sep	Oct Dec	Jan Mar	Apr Jun
			(S)	Q	Q				C			
					S		Q		S	C		
								S			C	
										S		C
												S

11. EXPLAIN WHAT WAS DONE THIS QUARTER AND HOW IT COMPARES WITH WHAT WAS PROPOSED IN BLOCK 12 OF THE LAST QUARTERLY REPORT. DESCRIBE ANY UNANTICIPATED PROBLEMS THAT AROSE THIS QUARTER OR ANY RECENT IMPLEMENTATION.

Another concept using thin, rigid, nested shells was explored, concept I (EYE). This design incorporates telescoping shells in the shape of median barrier that are strong enough to withstand lateral impacts. Inside the shells is an energy-absorbing system, possibly a coiled compression spring or small rubber blocks.

An LS-DYNA finite element model was constructed to simulate a lateral impact from a pickup truck. Initial results indicate that the shell needs to be stiffer to resist this type of impact. This may lead to the system becoming too heavy, and providing too much inertial resistance to a head-on impact from a small vehicle. Using light weight stiffer material is a possibility, but cost could be a limiting factor.

12. BRIEFLY DESCRIBE THE WORK PLANNED FOR THE NEXT QUARTER ALONG WITH ANY PROJECTED DEVIATIONS FROM THE WORK PLAN OR ANTICIPATED MODIFICATIONS TO THE COST ESTIMATE OR THE WORK SCHEDULE.

The nested shell concept I (EYE) will be further evaluated for feasibility. If this concept is not feasible, then another one will be explored.

13. Approved Funding		THIS FISCAL YEAR	TOTAL PROJECT	% EXPENDED TO DATE	14. Contractor Name In-house
		\$ 0	\$ 754,000		
Funds Expended To	Date 30 SEP 02	\$ 4807	\$ 280,447	37.2 %	15. Responsible Unit Roadside Safety Research Branch
Approved Caltrans PY's		1 PY'S	5.43 PY'S		16. Date 8 NOV 02
					Quarter 1st FY 03
PY's Expended To	Date 30 SEP 02	0.05 PY'S	2.75 PY'S	50.6 %	17. PI Signature (and Contract Monitor Initials)